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WAS THE BEGINNING DAY...

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WAS THE BEGINNING DAY OF THE MAYA MONTH NUMBERED ZERO (OR TWENTY) OR ONE?

BY

CHARLES P. BOWDITCH

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WAS THE BEGINNING DAY OF THE MAYA MONTH NUMBERED ZERO (OR TWENTY) OR ONE?

GOODMAN, in his elaborate and valuable book on the Maya Inscriptions, has made up his Tables on the supposition that the beginning day of the month was not called Day 1, but Day 20, giving the day this number because in his view the Mayas counted the number of days which had passed and not the current or passing day. That is, the Mayas, according to Goodman, used the same plan in counting their days which we use in counting our minutes and hours and which we depart from in counting our days. Thus, when we speak of January 1, we do not mean that one day has passed since January came in, but that the month of December has passed and that we are living in the day which when completed will be the first day of January. But when we say that it is one o'clock, we do not mean that we are living in the hour which when passed will be the first hour of the day or half-day, but we mean that one whole hour of the day or half-day has fully passed. Goodman's idea is that the Mayas used this system in counting their days of the month, their kins, uinals, tuns, katuns, and cycles. In other words he considers that the beginning day of the month Pop was not 1 Pop, but 20 Pop, the beginning day of Uo was 20 Uo; that the beginning kin of a uinal was Kin 20, the beginning uinal of a tun was Uinal 18, the beginning tun of a katun was Tun 20, that the beginning katun of a cycle was Katun 20, and that the beginning cycle of a grand cycle was Cycle 13. The reason why Goodman substitutes 18 and 13 for 20 in the case of the uinals and cycles respectively is that these are the numbers of uinals and cycles which are needed to make one of the next higher units in his scale of numeration.

Without considering the truth or error of his view in regard to the cycles, katuns, etc., let us try to solve the following questions:

1st. Did the Mayas count the days of their month by the day which had passed, as we count our hours?

2d. Was the number which they gave to the beginning day of the month 0 or 20?

For our answers to these questions, let us turn to pages 46–50 of the Dresden Codex. These pages contain three rows of twenty month dates each, and each of these dates is reached with but two exceptions by counting forward from the preceding date the number of days specified in red at the bottom of the pages, the first date of each row on page 46 being the regular number of days distant from the last date of the same row on page 50.

In the first row of dates, we find that the third date on page 48 is 12 Chen. The number of days at the bottom of the page which need to be counted forward in order to reach the fourth date is 8. If the beginning day of the month were marked by the Mayas with 1, then the last day would be marked with 20, and by adding 8 days to 12 Chen, we should reach 20 Chen. But the date is not 20 Chen. The month is Yax, — the month immediately following Chen, — and the glyph which takes the place of the number has a form resembling two half-circles placed side by side. In other words, in this case 8 days from 12 Chen reach ? Yax, and as far as the first proposition is concerned, it is immaterial whether the form above given is called 0 or 20. Eight days have taken us out of the month Chen into the next month Yax, and to a day of that month which is not 1 Yax, but must be a day preceding 1 Yax, whether that is called 0 Yax or 20 Yax.

Again, the first date of the first row of month dates on page 50 is 10 Kankin, and the number at the bottom of the page to be added in order to reach the second date is 90. Counting forward 90 days from 10 Kankin we should reach 20 Cumhu, if the begin-

ning day of the month is 1 Cumhu. But the month is not Cumhu nor is it Pop, but it is undoubtedly the glyph for the five supplementary days, Uayeb. The glyph which takes the place of the number is the same as that which has just been found before Yax. This is additional evidence that the months began with 0 or 20 and not with 1.

Again, on the first date of the second row of page 50 is 15 Cumhu, and the number of days to be added in order to reach the next date is 90, which appears at the bottom of the page. Counting forward this number of days from 15 Cumhu, we should reach 20 Zotz if the beginning day of the month were 1 Zotz. But the month is clearly Tzec, and the number is that which we have already found twice before as meaning 0 or 20.

These cases would seem to show that after passing day 19 of any month, we reach the beginning day of the next month, and that this day is found with the glyph which means 0 or 20.

Against this is the evidence of the last month date of the third row of page 49, which is clearly 9 Mac, and the number to be added at the bottom of the page is 236. This would take us to 20 Xul, if the beginning day of Xul is 1 Xul, but to 0 or 20 Yaxkin if the beginning day of Xul is 0 or 20. The first month date of the third row of page 50 is 0 or 20 Xul. This, I think, is clear, although the Xul glyph is not exactly like the other glyphs of this month.

Here then are three cases which support Goodman's view and one against it. The weight of evidence is therefore in favor of his system so far.

In the Inscriptions there are not very many cases where the month has the zero or twenty sign attached to it, and there are still fewer cases where this occurs in a position where the question can be decided from the context as to whether the 0 or 20 is the last day of one month or the beginning day of the next month.

On the inscription of the Temple of the Cross at Palenque, however, we have a month date which is 5 Ahau 3 Tzec. This is on R S 10. On R 8 to 9 we find 1 . 16 . 7 . 17 ., if the thumb with the katun glyph means 1, as it almost surely does. Counting forward this number of days from 5 Ahau 3 Tzec, we should reach 5 Caban 20 Zip if the month begins with 1, or 5 Caban 0 or 20 Zotz if the beginning day is 0 or 20. On S 12 R 13 is 5 Caban 0 or 20 Zotz. The form of the number glyph cannot fail to recall that of the similar glyphs in the Dresden Codex.

De Rosny has given in his "Compte-Rendu d'une Mission Scientifique," published in the "Mémoires de la Société d'Ethnographie," an admirable reproduction of the wooden inscription which came from Tikal. On Plate 12 of this work we find on A B 1, 3 Ahau 3 Mol, and on B 2 A 3, we have 2 . 11 . 12. By counting forward this number of days from 3 Ahau 3 Mol we reach 6 Eb 0 or 20 Pop, if the month begins with 0 or 20, but 6 Eb 5 Uayeb if the month begins with 1. This is a particularly strong case, for the month is surely Pop and the number is certainly not 5, and is like those of the manuscripts and of the Temple of the Cross, which we have just commented on and which are in all probability 0 or 20.

Again, on a part of a doorway in El Cayo, on C D 3 we find 13 Cimi 19 Zotz; on H 3 G 4 is a number which seems to be 8 . 18 . 6. Counting forward we reach 9 Eb 20 Uo, if the month begins with 1, or 9 Eb 0 or 20 Zip, if the months begin with 0 or 20. Although the glyphs for Uo and Zip resemble each other, yet the date on I J 1 is clearly 9 Eb 0 or 20 Zip. It should be said, however, that the number on H 3 G 4 is somewhat effaced and very unusual, in showing 18 uinals, and that there is another date 5 ? 3 Yaxkin on E F 3.

On the other hand the inscription of the Temple of the Cross shows us on D 3 C 4, 4 Ahau 8 Cumhu, and on D 5 C 6, is 1 . 9 . 2 .,

which is equal to 1 year 177 days. Counting forward this number of days from 4 Ahau 8 Cumhu we reach 13 Ik 20 Mol, if the month begins with 1, or 0 or 20 Chen, if the month begins with 0 or 20. On C D 9 we find 13 Ik ? Mol. However, on D 13 to C 15 we have the long number 1 . 18 . 3 . 12 . 0., which counted forward from 13 Ik 20 Mol brings us to 9 Ik 15 Zac, which is not found anywhere near by. But if we count forward this number from 13 Ik 0 or 20 Chen, we should reach 9 Ik 15 Ceh, which is found on E F 1. It would seem, therefore, that the glyph for Mol had been carved in error for that of Chen.

Other cases where 0 or 20 probably occur before the month sign are the following:

Copan,	Altar U, 1 to 2	2 Caban	0 or 20 Pop.
"	" U, 51 to 52	3 Eb	0 or 20 Pop.
Temple of the Cross,	Q 2 P 3	11 Caban	0 or 20 Pop.
" " "	" F 12 E 13	9 Ik	0 or 20 Chen (J. T. G.)
" " "	" E F 9	9 Ik	0 or 20 Yax or Zac.

The month glyph of the last example looks like Zac. If it is Yax it proves Goodman's theory by calculation.

Thus we see that in three out of four cases in the Dresden Codex and in three cases out of four in the Inscriptions where the context is such as to throw light on the question, the evidence is in favor of concluding that the months began with a day 0 or 20 and not with a day 1. Moreover in the single case in the Codex which tends to prove the contrary, it is interesting to see that the month glyph, Xul, is somewhat different from the other Xul glyphs, while in the doubtful case in the inscriptions, if the month glyph had been Chen and not Mol, it would have agreed with the dates before and after it. In other words, the calculations both before and after the date in question would be quite accurate if the month were Chen and if, therefore, the beginning day were 0 or 20,

while the glyph of Mol makes the calculation after that date inaccurate.

All the evidence taken gives a very strong presumption in favor of Goodman's theory that the month began with 0 or 20.

It is also interesting to notice that of the other dates given above where the calculation does not help us, three of these are 0 or 20 Pop (provided we have identified the number glyph correctly, which is certainly none of the known glyphs for any of the numbers 1 to 19). This date would not be significant if 20 Pop were the last day of the month, but it would be very significant if it were the beginning day of the month, that is the beginning day of the New Year. I think, therefore, that it is safe to assume as a good working hypothesis that the beginning days of the month were designated as 0 or 20, and the last day of the month as 19.

The second of our questions, — namely, whether this beginning day was called Day 0 or Day 20, — must now be taken up. Of course if we had decided that those cases which we have been considering represented the last days of the month, there would have been no question that the number glyphs which were not any of the numbers from 1 to 19 must be the number 20. It would have been very improbable that after having numbered the days of a month from 1 to 19 they would have called the last day 0. But it is not as certain that they might not have called the beginning day of a month 20, considering that twenty days had passed of the preceding month, and that their count was regulated by the number of days which had passed. As far as the month dates are concerned, however, it is absolutely unimportant whether the beginning day is called 0 or 20. Goodman says that the Mayas had no need of a zero (following the Romans in this respect), since zero was of no use as a multiplier. This is hardly conclusive. It may be true, as Goodman says, that the Mayas in their month

dates spoke of the twenty days which had passed in the preceding month; but it is equally true that they may have expressed this idea by attaching the number zero to the beginning day on the ground that no days of the current month had elapsed. Indeed the latter explanation is the more credible, since, if they had spoken of the twenty days of the preceding month as having elapsed, it would seem possible at least, and perhaps probable, that they would have used the name of the preceding month as well, and would have called the beginning day of Yaxkin, for instance, 20 Xul and not 20 Yaxkin. But this it seems they did not do, unless the instance on the Temple of the Cross and that of the Dresden Codex, already cited, would bear this construction. These instances, however, are contradicted by all the other cases and are themselves capable of a different interpretation. It would seem as if the Mayas probably called the beginning day of a month by the name of the current month, and that they attached the zero to it, meaning that no days of that month had elapsed. Moreover such a plan is very much easier for calculation and there is less liability to error; for it is natural to think of a day with the number 20 as following a day with the number 19 and as being the last day of a month containing 20 days, rather than the beginning day of a month. I do not place too much reliance on this, however, for it is hardly safe to argue back from what we at this time would consider the best thing to do, in order to find out what some other nation at some other time would have done.

The chief evidence in favor of giving the 0 or 20 glyph the meaning of 20 is, that this glyph is often drawn with a hand stretching across its lower part, especially when the main part of the glyph is a face. Now the face glyphs which represent the cycle of 144,000 days and the katun of 7,200 days are very similar, except that the cycle glyph has also a hand across its lower part, and the cycle is equal to 20 katuns; but this evidence

is somewhat weak, since it is clear that even if the 0 or 20 glyph should be decided to mean 20, in all calculations it is to be treated as 0, as is proved by many of the inscriptions of Palenque, Piedras Negras, Copan, and elsewhere.

On the whole, therefore, I think the weight of evidence is in favor of the hypothesis that the Mayas called the beginning days of their month Day 0 and numbered the days of their month from 0 to 19.